Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Currently amended) A displacement transducer comprising:first and second non-ferromagnetic coil forms with a common axis, each of said first and second coil forms wound with at least one winding;

[[the]] an outside diameter of the first form [[with]] and said at least one winding ~~its winding or windings~~ being smaller than [[the]] an inside diameter of the second form so that [[each]] said first and second forms may be displaced relative to [[the]] each other with the first form inside the second form[[;]], one of the coil forms being movable and the other coil form being stationary;

the at least one winding ~~or windings~~ on the movable form magnetically coupled to the at least one winding on the stationary form in the absence of any ferromagnetic element inductively coupling the windings; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less and having an RMS noise representing less than 2.1 nm of movement between the coils.

2. (Original) The transducer of claim 1, in which the sensor comprises;

the coil form with the smaller outside diameter wound with two or more windings and the other coil form wound with a single winding.

3. (Original) The transducer of claim 1, in which the sensor comprises;

the coil form with the larger inside diameter wound with two or more windings and the other coil form wound with a single winding.

4-60 (Canceled)

Kindly add the following new claims:

61. (New) A transducer as in claim 1, wherein said coil forms are formed of non-ferromagnetic material.

62. (New) A transducer as in claim 1, wherein said coil forms and said core forms collectively means for reducing Barkhausen noise in the displacement transducer.

63. (New) A transducer as in claim 1, wherein said electronic circuitry generates a signal having an RMS noise which produces a positional inaccuracy of less than 1.9 nm.

64. (New) A displacement transducer comprising:

first and second non-ferromagnetic coil forms made of non-ferromagnetic material with a common axis, each of said first and second coil forms wound with at least one winding;

an outside diameter of the first coil form and said at least one winding being smaller than an inside diameter of the second coil form so that said first and second coil forms may be displaced relative to each other with the first coil form inside the second coil form, and with one of the coil forms being movable and the other coil form being stationary;

the at least one winding on the movable form magnetically coupled to the at least one winding on the stationary form in the absence of any ferromagnetic element inductively coupling the windings; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less.

65. (New) A transducer as in claim 64, wherein said electronic circuitry generates a signal having an RMS noise which produces a positional inaccuracy of less than 2.1 nm.

66. (New) A transducer as in claim 64, wherein said coil forms and said core forms collectively means for reducing Barkhausen noise in the displacement transducer.

67. (New) A displacement transducer comprising:

first and second non-ferromagnetic coil forms with a common axis, each of said first and second coil forms wound with at least one winding;

an outside diameter of the first coil form and its at least one winding being smaller than an inside diameter of the second coil form so that said first and second coil forms may be displaced relative to each other with the first coil form inside the second coil form, and with one of the coil forms being movable and the other coil form being stationary;

said coil forms and said core forms including means for reducing Barkhausen noise when the first and second coil forms move relative to each other; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less and having reduced Barkhausen noise effect.

68. (New) A transducer as in claim 67, wherein said electronic circuitry generates a signal having an RMS noise which produces a positional inaccuracy of less than 2.1 nm.

69. (New) A method of operating a displacement transducer, comprising:

forming first and second non-ferromagnetic coil forms which each have at least one winding, and are wound with a common axis, with one of coil forms being inside the other;

allowing one of said coil forms to move relative to the other;

reducing an effect of Barkhausen noise on the coil forms as they move; and

generating an output signal responsive to relative displacements between the coil forms, which output signal has an RMS noise that forms a positional inaccuracy of 2.1 nm or less.